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1 RECORD OF ORAL HEARING
2 UNITED STATES PATENT AND TRADEMARK OFFICE

3
4 BEFORE THE BOARD OF PATENT APPEALS
5 AND INTERFERENCES

6
7 Ex parte SEAN P. BURNS,
8 LARRY A. MOQUIN,
9 PARESH S. KHANDHADIA

10
11 Appeal 2008-3465
12 Application 09/638,606
13 Technology Center 1700

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16 Oral Hearing Held: July 8, 2008

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19 Before CHARLES F. WARREN, THOMAS A. WALTZ,
20 and JEFFREY T. SMITH, Administrative Patent Judges.
21

22 ON BEHALF OF THE APPELLANT:

23 LAURENCE C. BEGIN, ESQUIRE
24 L.C. Begin & Associates, PLLC
25 510 Highland Avenue
26 PMB 403
27 Milford, Michigan 48381
28 (248) 889-5875
29 (248) 887-7664 - fax
30 larrybegin@beginlaw.com
31
32
33

1 The above-entitled matter came on for hearing on Tuesday, July
2 8, 2008, commencing at 10:18 a.m., at the U.S. Patent and Trademark
3 Office, 600 Dulany Street, Alexandria, Virginia, before Dawn A. Brown,
4 Notary Registration No. 7066896, Notary Public.

5 THE USHER: Calendar Number 9, Appeal Number 2008-
6 3465. Mr. Begin.

7 JUDGE WARREN: Good morning, Mr. Begin.

8 MR. BEGIN: Good morning, Your Honors.

9 JUDGE WARREN: As usual, sir, you have 20 minutes. You
10 may proceed when ready.

11 MR. BEGIN: I think we've briefed this fairly thoroughly. The
12 invention mainly details the addition of selective non-catalytic reducing
13 compound into a separate composition in the gas inflator. Each of the
14 claims are directed to that relationship of the separateness or the
15 heterogeneity of the selective non-catalytic reducing compound and the gas-
16 generant composition.

17 I think -- I believe that the -- one of the main differences
18 between the examiner and myself on this, and the applicant, is that the
19 examiner looks to the definition of heterogeneous and homogeneous as
20 almost synonymous.

21 The applicant throughout his application has indicated the
22 separateness and the heterogeneous relationship of the selective non-
23 catalytic reducing compound or the SNCR agent and the gas-generant
24 composition.

25 In each of the claims -- if I can just go over those for a second
26 here.

1 In Claim 21, for example, the limitation in heterogeneous
2 relation, the selective non-catalytic reducing compound placed within
3 heterogenous relation to said gas-generant composition, that limitation
4 indicates the relationship between the SNCR agent and the selective non-
5 catalytic reducing agent and the gas-generant composition.

6 What is being conveyed in there is what we plead throughout
7 the specification.

8 If we go to the specification and we look to the definition of
9 heterogeneous as given by the applicant in several different areas, if we go
10 to Page 5, for example, Lines 22 through 30, we see the de-NOx agent or
11 SNCR agent preferably provided at 0.01 to 4 percent, and more preferably at
12 0.1 to 3 percent, by way of the total weight of the gas generant, is
13 heterogeneously dispersed or disposed around the periphery of the gas
14 generant within the gas-generant bed.

15 The heterogeneous connected to the periphery of the gas
16 generant indicates the relationship between the gas-generant composition
17 and the SNCR agent as far as the applicant is concerned.

18 There is a separateness, a distinction, and to say that
19 heterogeneous on a micral level, two particles side by side would be
20 heterogeneous, we know that, but the meaning -- the plain meaning that the
21 applicant has given throughout the specification is that heterogeneous should
22 be applied from a micral standpoint as opposed to a particulate standpoint.

23 JUDGE WALTZ: Excuse me, counselor, but giving the
24 broadest reasonable meaning to those words --

25 MR. BEGIN: Yes?

26 JUDGE WALTZ: -- would that include the SNCR agent just in

1 one lump inside the gas generant instead of around the periphery?

2 MR. BEGIN: No, sir.

3 JUDGE WALTZ: That wouldn't be heterogeneous? It is not
4 homogeneous if it is not spread equally throughout, right?

5 MR. BEGIN: You're absolutely right. If it wasn't spread
6 equally throughout, there would be a heterogeneous type of relationship.
7 But in the gas-generant art, it is important to mix the composition thoroughly
8 to ensure repeatability of performance of the inflators, an even burn of the
9 gas generant throughout the tablet if it is providing the tablet, for example.

10 Without that homogeneous consistency, you cannot be assured
11 of the repeatability of performance, and there would be questions of whether
12 or not the product would perform as it needs to do. Is that helpful?

13 JUDGE WALTZ: You're saying you're limiting your claim to
14 your spec to the -- around the periphery.

15 MR. BEGIN: About the gas-generant composition. Not within
16 it but about it. And in the examples, we even go into the fact that -- if I go to
17 Page 10 of the specification -- or Page 9, in the middle of the page about
18 Line 15, the selective non-catalytic reducing compound is discreetly
19 interspersed about the gas-generant composition in heterogeneous relation
20 thereto.

21 If we go further down, we see the present invention is
22 illustrated by the following examples. In each example, this is right at the
23 bottom of Page 9, it describes the example, the composition as it is made,
24 and the formula as taught in U.S. Patent Number 5,139,588.

25 Again, there is homogeneous mixing of those gas-generant
26 constituents to ensure repeatability of performance and to ensure an even

1 burn of those gas generants as they're ignited, during a crash event, for
2 example.

3 The examples state that -- in particular, Example 2, it speaks of
4 two side-by-side gas-generant inflators. In fact, Example 3 also goes into
5 that. Examples 2 and 3. One was ammonia carbonate but because we've
6 elected ammonium sulfate, I'll go to Example 3.

7 Example 3 states ammonium sulfate was added directly to the
8 gas-generant bed of one of the inflators as a powder at 1.28 percent of the
9 generant mass.

10 So we're adding this over the propellant bed. There is a
11 heterogeneous relationship when you add that over the propellant bed.
12 There is no mixing within the gas-generant composition. And that is -- how
13 the gas-generant is prepared is, again, stated on Page 9. In each example --
14 it read at the bottom, in each example the gas-generant consisted of extruded
15 or catalytic compositions.

16 So when we place this SNCR agent over the catalytic
17 compositions, there is no mixing. It is a heterogeneous relationship. There
18 are two separate compositions within the inflator.

19 JUDGE SMITH: Sir, are you getting different performance by
20 using this method?

21 MR. BEGIN: Yes, sir. Some of the evidence that has been
22 presented indicates a reduction of carbon monoxide and a reduction NOx
23 species after combustion.

24 One of the benefits of this is that rather than seeking approval
25 and going through all the qualifications that my client must go through when
26 selling this, they can add this to it and look to the results with regard to NOx

1 and carbon monoxide, for example.

2 JUDGE SMITH: Is that compared to a composition that has it
3 interspersed throughout the composition, like you're saying the prior art
4 teaches, your comparison? Or is that compared to a composition that doesn't
5 have the SNCR?

6 MR. BEGIN: It is compared to a composition that does not
7 have an SNCR agent in it. The composition may, in fact, be one from Poole.
8 If it has added amounts of NO_x in it, Poole talks about an alkaline metal salt
9 that is added.

10 Poole is, of course, of record. The alkaline metal salt was
11 specifically added to reduce the nitrogen oxides and the carbon monoxide.
12 And there was no teaching that that was insufficient.

13 Now, as the OEM's are required to change the air effluent or the
14 quality of the air effluent, it is certainly cost effective to be able to sprinkle
15 this above that and change that rather than -- changing the effluent rather
16 than creating a whole new gas-generant composition and qualifying it. So
17 do I have data --

18 JUDGE SMITH: By interspersing the SNCR into the
19 composition, you say you have to get further approval. Is there a reaction
20 that is taking place once you add this and dispersed it as described in the, I'll
21 just say, the 514 reference, which is the secondary reference?

22 MR. BEGIN: The gas-generant composition is burning, just as
23 in the Poole or the Pacanowsky reference. When we ignite it, it burns, the
24 SNCR agent decomposes, and in theory, there is an NH₂ radical that is
25 liberated and is then available to react with the NO_x species to reduce them.
26 We also see a reduction of carbon monoxide at the same time.

1 JUDGE WALTZ: What you're saying Claim 21 should be read
2 as heterogeneous relation means it is unmixed?

3 MR. BEGIN: Yes, sir.

4 JUDGE WALTZ: The SNCR is not mixed with a gas-generant
5 composition?

6 MR. BEGIN: Yes, sir. And we do note that the applicant may
7 be their own lexicographer if there is some ambiguity about the term in the
8 claim as there may have been here. The specification, certainly, it has been
9 relied upon to illuminate the examiner on what scope should be given to the
10 claims.

11 So as you've indicated, sir, yes, we don't look to cover a
12 mixture of this SNCR agent within a gas-generant composition. We looked
13 to cover a gas-generant composition with this added over it, or inflated with
14 that, rather.

15 JUDGE SMITH: So is the --- that you're presenting today
16 inclusive of your alternative embodiment as described on Pages 5 and 6 of
17 the specification where you refer to the tea bags being placed in contact with
18 or proximate to the gas generant?

19 MR. BEGIN: That would be another application of it because
20 the tea bag is just a way to contain it from a manufacturing standpoint to
21 make it more efficient in the manufacturing approach. But it is still laid over
22 the propellant bed in proximate but separate communication with that gas
23 generant.

24 I would note that Pacanowsky in Example 1 -- I'll just go over
25 that very briefly here. If we look to Column 4, Line 54, we see down
26 through Line 68 that the gas-generant constituents there, that would be an

1 oxidizer, a perchlorate oxidizer, a elastomeric combustible fuel binder,
2 ammonium sulfate, and special-purpose additives are thoroughly mixed.
3 That is in Line 68.

4 So the process is that they are thoroughly mixed. There is no
5 question that they are not thoroughly mixed. And that is as known in the art.
6 A gas-generant composition must be thoroughly mixed. If it is not, it does
7 not perform in a repeatable manner.

8 As we go further down to Example 1 with that in mind,
9 Example 1 indicates that a gas-generant composition was prepared in the
10 manner described above containing the following ingredients in the
11 indicated proportion. So it was prepared by thoroughly mixing.

12 And as we go further down even yet, the gas generants
13 contained in the forgoing composition were tested at a compressive
14 accelerated forces of 18 g's and 137 g's with results from Figures 1 and 3 of
15 the drawings. Figure 1 shows the pressure trace for the generator tested at
16 18 g's.

17 And then the next part is illuminating. It will be noted that after
18 an initial pressure surge at the time of ignition followed by a sharp pressure
19 drop, the pressure leveled off at about 2,500 p.s.i.a. and decreased slightly as
20 the propellant burned.

21 This contrasts with pressure traces for gas generator
22 compositions which do not contain the ammonium sulfate desensitizer
23 which, when subjected to an accelerative force of this magnitude, commonly
24 show a progressive increase in pressure during most of the burning period
25 between ignition and burnout.

26 So you get something that would actually be not desirable

1 without that thoroughly mixed within that composition. Again, the present
2 invention is not looking to thoroughly mix it; it is looking to add it to forgo
3 the necessity of rebuilding the inflator, in essence.

4 JUDGE SMITH: The question I have about this record is both
5 comparisons based on what you said about your record and the Pacanowsky
6 reference is that you both compare them to gas-generant compositions that
7 exclude the SNCR. I don't understand what the difference is going to be
8 between their thoroughly mixed SNCR and yours sprinkled in on top.

9 MR. BEGIN: The difference is in the approach. With a gas
10 generant, that does not have it in it, and it has perhaps issues with the
11 amount liberated and the amount of carbon monoxide that is liberated upon
12 combustion. The purpose of the SNCR agent is to be able to just sprinkle it
13 on there instead of having to go through the approval process and the
14 qualification process of that gas generator.

15 If you can sprinkle this over the gas generator that has already
16 been approved by potential OEM's out there, then you need not go back to
17 the drawing board and, again, create the gas generant.

18 This is really a remedial method after the fact, after something
19 has already been created to, in fact, tailor it so it meets new specification or
20 new requirements.

21 JUDGE SMITH: That still doesn't answer the question as to by
22 having the SNCR present whether thoroughly mixed or sprinkled on top, the
23 result after the gas generant reacts or explodes, if you want, you still need
24 this SNCR to reduce the nitrogen oxide or nitrogen oxide compounds that
25 are free. That is the result of both the prior art and what you're claiming; is
26 that correct?

1 MR. BEGIN: Would you say that again, please?

2 JUDGE SMITH: Okay. What is the objective of the SNCR?

3 MR. BEGIN: The objective of the SNCR is to very cost
4 effectively tailor the combustion effluent by adding it after the gas generator
5 has been developed, by adding it after the fact, so we know then that the
6 NOx and carbon monoxide based on interim trials is reduced to the new
7 OEM specifications.

8 JUDGE SMITH: And interspersing that in the gas generant,
9 would that achieve the same result as far as the reaction with the nitrogen
10 oxide?

11 MR. BEGIN: I don't think there is anything in the record that
12 would suggest it would. There is nothing under the prior art reference that
13 would suggest that. Poole solves the problem by adding alkaline metal salts.
14 It doesn't suggest that an SNCR agent could be added separately from it, so
15 there is nothing in Poole that suggests that.

16 There is nothing in Pacanowsky either that would suggest a
17 concern with either carbon monoxide or NOx. The concern there is ensuring
18 the integrity of the gas-generant due to -- or in the midst of accelerative
19 forces.

20 So either reference doesn't -- the purpose of either reference -- it
21 either solves a problem in a completely different way, which Poole does by
22 mixing an alkaline metal salt within it, or it uses ammonium sulfate within
23 the composition as a means to remedy the effects of accelerative forces on
24 the gas generator. There is nothing in there that would suggest that this
25 would have a beneficial impact.

26 And from the point of development of my client, their point

1 was that rather than go in and retool the gas generant, we would rather add
2 it, so that testing may not have been done.

3 JUDGE WARREN: Anything else, counselor?

4 MR. BEGIN: I do think that Pacanowsky does require that the
5 ammonium sulfate be mixed thoroughly. And, again, that is in Example 1,
6 and it is also in the preceding column, I believe Column 4, that indicates it
7 must be thoroughly mixed in preparation.

8 When ammonium sulfate is not used and it is not thoroughly
9 mixed within the example of Example 1, you don't have the advantage -- or
10 you have the adverse effect of the accelerative forces. So it must be
11 thoroughly mixed.

12 And the examiner's interpretation of potential heterogeneity
13 based on the lack of uniformity of mixing is not consistent with that teaching
14 in Example 1.

15 I think -- if Your Honors don't have any further questions, I
16 think that I'm satisfied with what I presented. Thank you for your time.

17 JUDGE WARREN: Thank you very much, counselor. Have a
18 good day.

19 Whereupon, the proceedings at 10:37 a.m. were concluded.
20